

# A review of Chinese species of *Leptomastidea* Mercet (Hymenoptera: Encyrtidae)

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**Abstracts:** Six species of *Leptomastidea* are taxonomically studied from China. *L. herbicola*, *L. rubra*, *L. shafeei* are recorded from China for the first time. A key to Chinese species of *Leptomastidea* is given and photomicrographs are provided to illustrate morphological characters of the species. The specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing.

**Key words:** Hymenoptera; Encyrtidae; *Leptomastidea*; taxonomy; new record; China

## INTRODUCTION

In the family Encyrtidae (Insecta: Hymenoptera), *Leptomastidea* Mercet is a world-widely distributed genus currently with 23 species (Noyes, 2008), while most of them are from the Old World. *Leptomastidea* is placed in tribe Anagyrini (Hymenoptera, Encyrtidae, Tetracneminae) (Trjapitzin, 1989; Noyes and Hayat, 1994; Noyes, 2000; Prinsloo, 2001). All known species of *Leptomastidea* are primary endoparasitoids of Pseudococcidae (Homoptera) and are of potential importance in biological control (Noyes and Hayat, 1994). The present work aims to study all available Chinese species of *Leptomastidea*, to facilitate the species recognition by providing a dichotomous key to Chinese species and to summarize the available information on host and distribution.

Morphological terminology generally follows that of Noyes and Hayat (1994) and Noyes (2000).

Absolute measurements are used for body length. Relative measurements are used for other dimensions. All specimens examined, unless specified, are deposited in Institute of Zoology, Chinese Academy of Sciences (IZCAS), Beijing, China.

## TAXONOMY

### Genus *Leptomastidea* Mercet

*Leptomastidea* Mercet, 1916: 112. Type species: *Leptomastidea aurantiaca* Mercet, by monotypy.

*Tanaomastix* Timberlake, 1918: 362. Type species: *Paraleptomastix abnormis* Girault, by original designation. Synonymized with *Leptomastidea* by Mercet, 1924: 252.

Generic diagnoses have been given by Noyes and Hayat (1994), Noyes (2000), and Zhang and Huang (2004). Key to African species see Prinsloo (2001) and to Palaearctic species see Trjapitzin (1989).

### Key to Chinese species of *Leptomastidea* (females)

- |   |  |                     |
|---|--|---------------------|
| 1 | Fore wing hyaline or with an oblique infusate band below submarginal vein only .....   | 2                   |
| – | Fore wing with infusate bands or stripes other than the oblique infusate band below submarginal vein .....                           | 3                   |
| 2 | Fore wing with postmarginal vein clearly longer than stigmal vein (Fig. 3) .....   | <i>L. shafeei</i>   |
| – | Fore wing with postmarginal vein hardly longer than stigmal vein .....   | <i>L. minyas</i>    |
| 3 | Fore wing with an oblique infusate band and with two transverse infusate bands or stripes (see Fig. 329 in Noyes, 2000) .....        | <i>L. abnormis</i>  |
| – | Fore wing with two oblique infusate bands or with two oblique infusate bands and another oblique stripe near apex (Figs. 5, 7) ..... | 4                   |
| 4 | Fore wing with two oblique infusate bands and an oblique stripe near apex (Fig. 7) .....   | <i>L. herbicola</i> |

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- Fore wing with two oblique infusate band below submarginal vein and marginal vein separately (Fig. 5) ..... 5
- 5 Fore wing about 3 times as long as broad ..... *L. rubra*
- Fore wing 4 times as long as broad ..... *L. longicauda*

### 1 *Leptomastidea abnormis* (Girault) (Fig. 1)

*Paraleptomastix abnormis* Girault, 1915: 184.

*Tanaomastix abnormis* (Girault): Timberlake, 1918: 362.

*Leptomastidea abnormis* (Girault): Mercet, 1924: 254, 255 – 256; Xu and Huang, 2004: 153 – 154.

*Leptomastidea aurantiaca* Mercet, 1916: 113.

Synonymized with *abnormis* by Mercet, 1924: 255.

Noyes (2000) treated *Leptomastidea jeanneli* Mercet, 1924 as a synonymy with *L. abnormis*. Prinsloo (2001) resurrected *L. jeanneli* as a valid species on basis of differences in the shape of the fuscous bands of forewing. This species is described and illustrated in some recent literatures (Noyes, 2000; Prinsloo, 2001).

Host: *Dysmicoccus brevipes*, *Dysmicoccus ryani*, *Ferrisia virgata*, *Phenacoccus gossypii*, *Planococcus* sp., *Planococcus citri*, *Planococcus kraunhiae*, *Planococcus vitis*, *Pseudococcus* sp., *Pseudococcus calceolariae*, *Pseudococcus citriculus*, *Pseudococcus comstocki*, *Pseudococcus cryptus*, *Pseudococcus ficus*, *Pseudococcus kenya*, *Pseudococcus longispinus*, *Pseudococcus maritimus*, *Pseudococcus njalensis*, *Saccharicoccus sacchari* (Homoptera: Pseudococcidae).

Distribution: China (Fujian and Guangxi), Algeria, Argentina, Australia, Azerbaijan, Bermuda, Brazil, Canada, Canary Islands, Chile, Costa Rica, Cuba, Cyprus, Dominican Republic, Egypt, Ethiopia, France, Georgia, Ghana, Greece, Israel, Italy, Japan, Kenya, Mexico, Morocco, New Zealand, Peru, Sierra Leone, South Africa, Spain, Tajikistan, Turkmenistan, USA, Uzbekistan.

Material examined: China. 2 ♀♀, Fuzhou, Fujian, i. 1999, coll. WU Qiang; 1 ♀, Nanning, Guangxi, 2. v. 1993, coll. XU Guang (Det. by Xu, 2004).

### 2 *Leptomastidea herbicola* Trjapitzin (Figs. 6 – 8) New record in China

*Leptomastidea herbicola* Trjapitzin, 1965: 888 – 890.

*Leptomastidea herbicola* Trjapitzin: Trjapitzin, 1989: 145.

Diagnosis: Female (length 1.0 – 1.5 mm). Head yellowish; pronotum yellowish; dorsum of thorax varying from brown yellowish to dark brown except visible part of pronotum yellowish; ventral part of thorax anteriorly yellowish; gaster often dark brown; antenna dark brown, except apex of pedicel yellow, F3 – F6 varying from brownish yellow to yellow brown; tegula apically black; fore wing infusate as in Fig. 7; legs generally dark brown

except fore coxae (sometimes apically brownish), fore tibia and tarsi, mid tibia and mid tarsi, and tarsi yellow; hind tibia often brownish. Head about 2 × as wide as frontovertex; ocelli forming an angle of about 90°; antenna (Fig. 6) with scape somewhat expanded and flattened, nearly 4 × as long as broad; pedicel about as long as F1; all funicular segments conspicuously longer than broad; clava about as long as F5 and F6 combined; fore wing wide, about 3 × as long as broad (Fig. 7). Gaster with ovipositor hardly exerted; ovipositor about half mid tibia length (OL 35, MT 70). Male (length about 1.0 mm). Very similar to female but for antenna (Fig. 8) and genitalia.

Host: Unknown.

Distribution: China (Fujian, Jilin, Liaoning and Shan'xi), Russia.

Material examined: China. 2 ♀♀, Jiangle, Fujian, 7. vii. 1991, coll. LIU Chang-ming; 1 ♀, Changchun, Jilin, 7. viii. 1999, coll. LIN Nai-quan; 2 ♀♀, 1 ♂, Shenyang, Liaoning, viii. 1991, coll. YU Xing-Guo; 1 ♀, Qinling, Shan'xi, 22. vii. 1973, coll. LIAO Ding-Xi.

### 3 *Leptomastidea shafeei* Hayat and Subba Rao (Figs. 2, 3) New record in China

*Leptomastidea indica* Shafee, Alam and Agarwal, 1975: 24.

*Leptomastidea shafeei* Hayat and Subba Rao, 1981: 114. (Replacement name for *Leptomastidea indica* Shafee, Alam and Agarwal, 1975 nec Subba Rao, 1967)

Diagnosis of *Leptomastidea shafeei* has been given by Noyes and Hayat (1994).

Host: mealybug (Pseudococcidae) (Hayat, 1986).

Distribution: China (Yunnan), India, Indonesia, Thailand.

Material examined: China. 1 ♀, Xishuangbanna, Yunnan, 25. xi. 2002, coll. ZHEN Wen-Quan; 1 ♀, Xishuangbanna, Yunnan, 19. viii. 2007, coll. ZHENG Guo.

### 4 *Leptomastidea longicauda* Xu

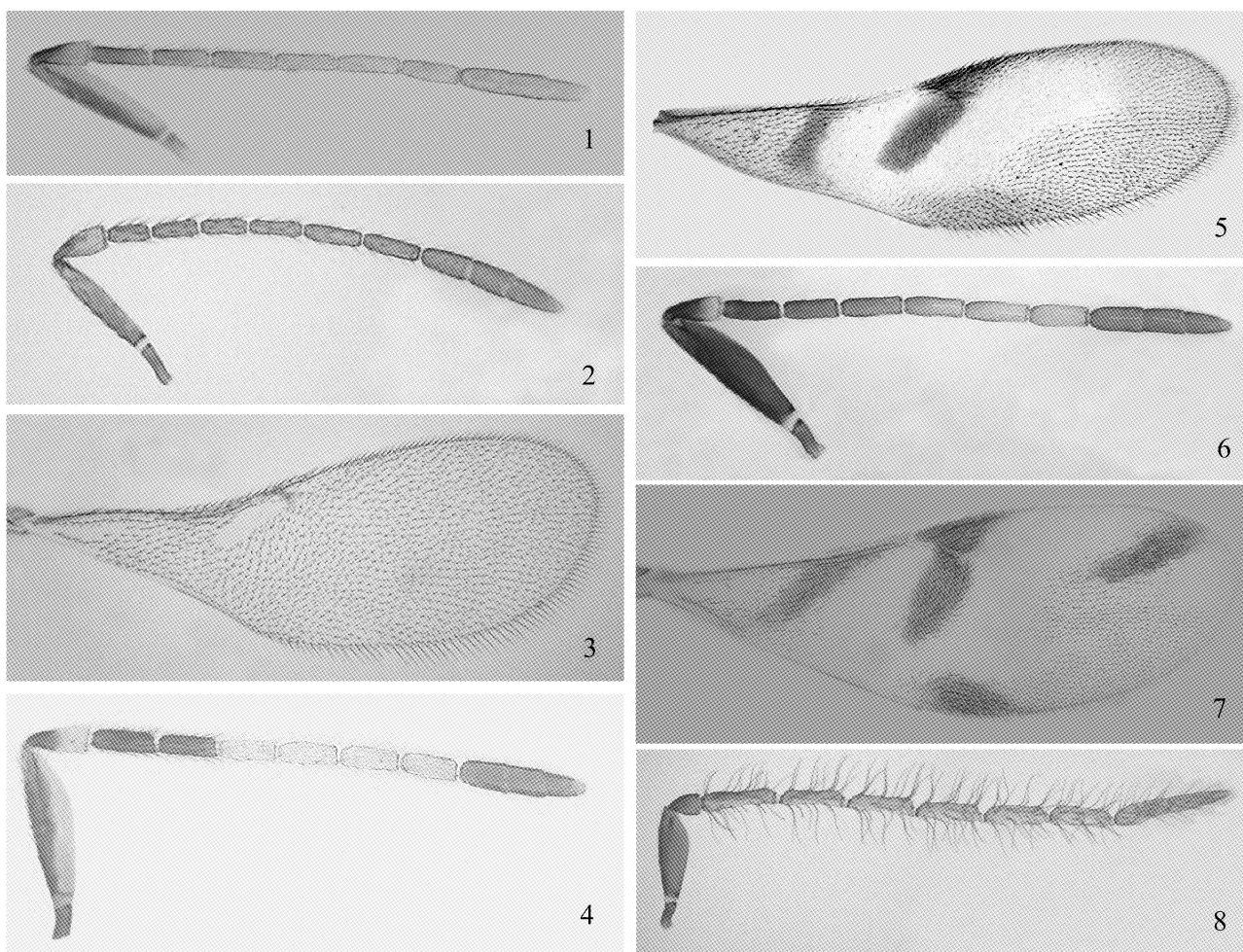
*Leptomastidea longicauda* Xu in Xu and Lou, 2000: 152.

*Leptomastidea longicauda* Xu: Xu and Huang, 2004: 153 – 154.

Host: Unknown.

Distribution: China.

Comments: The authors have reexamined the holotype of *L. longicauda* Xu, which was mounted on a slide. In the original description, it was incorrectly stated that the ovipositor is much exerted and about as long as gaster. In fact, the ovipositor is clearly shorter

Figs. 1–8 *Leptomastidea* spp.

1: *Leptomastidea abnormis*, antenna, female. 2–3: *L. shafeei*, 2, Antenna, female; 3, Fore wing, female. 4–5: *L. rubra*, 4, Antenna, female; 5, Fore wing, female. 6–8: *L. herbicola*, 6, Antenna, female; 7, Fore wing, female; 8, Antenna, male.

than gaster and about half mid tibia length. *L. longicauda* is very close to *L. rubra* and probably a synonym of *L. rubra*. For the present we are remaining it as a valid species only based on variation of forewing and pending a detailed taxonomic study.

##### 5 *Leptomastidea minyas* Noyes and Hayat

*Leptomastidea minyas* Noyes and Hayat, 1994: 152.

Host: Unknown.

Distribution: China (Hainan Island), India.

##### 6 *Leptomastidea rubra* Tachikawa (Figs. 4, 5) New record in China

*Leptomastidea rubra* Tachikawa, 1956: 141.

*Leptomastidea rubra* Tachikawa; Tachikawa, 1963: 63–64; Trjapitzin, 1989: 145; Noyes and Hayat, 1994: 466.

Diagnosis: Female (length 1.0–1.5 mm). Head yellowish; thorax reddish yellow; gaster yellowish, sometimes dorsa-laterally marked dark brown; antennal scape dark brown, venral margin yellowish; apex of pedicel yellow, F3–F6

(sometimes F2 apically) yellowish; fore wing infusate as in Fig. 5; legs generally yellowish except mid and hind femora marked dark brown stripes, hind tibia brownish. Head about 2 × as wide as frontovertex; ocelli forming an angle of about 100°; antenna (Fig. 4) with scape somewhat expanded and flattened, about 3 × as long as broad; pedicel about as long as F1; all funicular segments conspicuously longer than broad; clava about as long as F5 and F6 combined; fore wing often more than 3 × longer than broad, venation as in Fig. 5. Gaster with ovipositor hardly exerted, ovipositor slightly less than half mid tibia length (OL 30, MT 68). Male (length usually less than 1.0 mm). Very similar to female but for antenna and genitalia.

Host: *Paracoccus flavidus*, *Pseudococcus comstocki*, *Pseudococcus copiosus*, *Pseudococcus longispinus*, *Puto pilosellae*, *Trionymus multivorus* (Pseudococcidae); ? eriococcid (Eriococcidae) (Trjapitzin, 1989).

Distribution: China (Beijing, Shaanxi and Shan'xi), Greece, Israel, Japan; Russia, Turkmenistan, Uzbekistan.

Material examined: China. 1 ♀, Fengxian, Shan'xi, 4. ix. 1999, coll. LIN Nai-Quan; 1 ♀, 4 ♂♂, Wutai Mt., Shanxi, 14. vii. 2006, alt. 1 600 m, coll. ZHANG Yan-Zhou; 1 ♀, Shunyi, Beijing, 26. vii. 1983, coll. HUANG Da-Wei.

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## 中国拟细角跳小蜂属分类学研究

### (膜翅目: 跳小蜂科)

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**摘要:** 对中国拟细角跳小蜂属 *Leptomastidea* 分类研究进行了回顾, 并记述了分布于中国的拟细角跳小蜂属 6 种, 其中草居拟细角跳小蜂 *L. herbicola*, 红胸拟细角跳小蜂 *L. rubra* 和谢氏拟细角跳小蜂 *L. shafeei* 为中国新记录种。文中提供了分种检索表、形态特征图。研究标本保存在中国科学院动物研究所。

**关键词:** 膜翅目; 跳小蜂科; 拟细角跳小蜂属; 分类; 新记录; 中国

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